

Publication number : **0 512 748 A3**

(12)

# EUROPEAN PATENT APPLICATION

(21) Application number : 92303892.1

(51) Int. Cl.<sup>5</sup> : **H04N 9/64**, **H04N 9/66**,  
**H04N 5/60**

(22) Date of filing : 30.04.92

(30) Priority : 03.05.91 GB 9109617

(43) Date of publication of application :  
11.11.92 Bulletin 92/46

(84) Designated Contracting States :  
AT DE ES FR GB IT NL SE

(88) Date of deferred publication of search report :  
14.07.93 Bulletin 93/28

(71) Applicant : **TEXAS INSTRUMENTS LIMITED**  
Manton Lane  
Bedford MK41 7PA (GB)

(72) Inventor : **Ritchie, James Kenneth Alexander**  
31 Lovell Road  
Bedford, MK42 0LR (GB)  
Inventor : **Abbott, David**  
156 Tyne Crescent  
Bedford, MK41 7YB (GB)  
Inventor : **Anderson, Adrian**  
Trellech Grange  
Chepstow, Gwent NP6 6QW (GB)  
Inventor : **Parris, Clifford**  
3 Park Glade  
Tintern, Gwent NP6 6TX (GB)

(74) Representative : **Abbott, David John et al**  
**Abel & Imray Northumberland House 303-306**  
High Holborn  
London, WC1V 7LH (GB)

(54) Method and apparatus for signal processing.

(57) A digital demodulator for a NICAM 728 system signal has sampling and digitizing means converting the signal into a succession of digital samples. The digital samples pass through an anti-aliasing digital comb filter to a selector (decimator) that selects one sample in three and feeds it to a second digital filter. Digital matched filters for the in-phase (I) and quadrature (Q) components of the signal effect the demodulation. Carrier and symbols tracking is carried out digitally. A pulse-width modulated automatic gain control signal is produced for controlling the amplitude of the signal applied to the sampling and digitizing means.

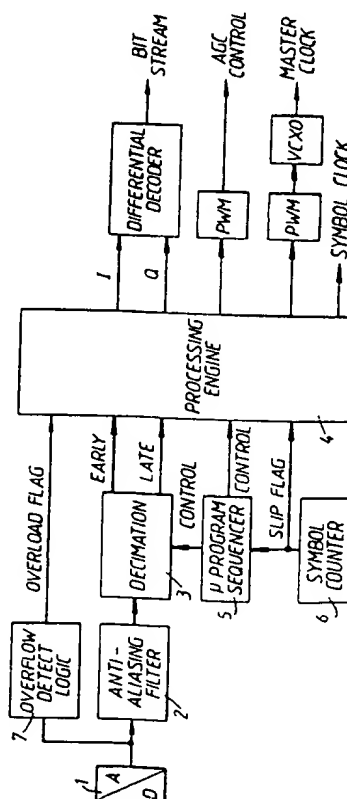


Fig.1.

EP 0 512 748 A3



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number

EP 92 30 3892

Page 1

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	WO-A-8 904 576 (DEUTSCHE ITT INDUSTRIES GMBH) 18 May 1989	1,2,5, 8-10,13, 18,19, 22,25-29	H04N9/64 H04N9/66 H04N5/60
Y		11	
A	* the whole document *	12,14	
Y	ELEKTRONIK, vol.39, no.6, 16 March, 1990, München, DE, XP000102222, pages 50-54,56; T. HILPERT et al.: 'Digitaler Multistandard-Audio-Chipsatz'	11	
A	* the whole document *	1,12,14	
L	ELEKTOR ELECTRONICS, May, 1992, XP000290987, pages 34-38,39-42; R. KRIJGSMAN: 'NICAM decoder'	-	
A	* the whole document * [cited as reference to Micronas chip set] & MICRONAS MAS7A101 data sheet: 'NICAM QPSK demodulator', 10 September, 1990, Eps00, FI, pages 1-10	1-14, 18-29	
A	* complete paper * & MICRONAS MAS7D102 data sheet: 'NICAM decoder', 10 September, 1990, Eps00, FI, pages 1-17	1-14, 18-29	
A	* complete paper * & MICRONAS MAS7A103 data sheet: 'Dual 14 bit D/A converter for NICAM', 21 April, 1990, Eps00, FI, pages 1-8	1-14, 18-29	H04N H04B H04H H04L
A	--- BBC RESEARCH DEPARTMENT REPORT, no.6, 1990, Tadworth, GB, XP000208352, pages A,B,C,1-27; A.J. BOWER: 'NICAM 728 - Digital two-channel sound for terrestrial television'	1-10, 18-29	
	* the whole document * --- -/--		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11 MAY 1993	Examiner HOEKSTRA A.
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons A : number of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

EPO FORM 1501 (01.82) (P0001)



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number

EP 92 30 3892

Page 2

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	<p>ELECTRONIC COMPONENTS and APPLICATIONS, vol.10, no.3, Eindhoven, NL, XP000288521, pages 121-127; P. DOUBLE: 'NICAM-728 two-channel digital TV sound' * the whole document *</p> <p>-----</p>	1, 18	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>11 MAY 1993</b>	Examiner <b>HOEKSTRA A.</b>
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1501 (01.92) (P0401)